

Scenario Worksheet

Practice and Scenario Description:

| Information Type | Data |
|---------------------------|--|
| Region | New England |
| State | Connecticut |
| Discipline Group | Agronomy |
| Practice Code/Name | 345 - Res. & Tillage Mgt, Mulch-till |
| Scenario ID | 1 |
| Scenario Name | Mulch till-Basic |
| Scenario Description | Mulch-till is managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting the soil-disturbing activities used to grow crops in systems where the entire field surface is tilled prior to planting. This practice includes tillage methods commonly referred to as mulch tillage or chiseling and disking. It applies to: stubble mulching on summer-fallowed land; tillage for annually planted crops; and tillage for planting perennial crops. All residue shall be uniformly distributed throughout the critical soil erosion period. All residue shall be uniformly distributed over the entire field and not burned or removed. In the before situation, periods of intensive tillage have led to excessive soil loss, often above the Soil Loss Tolerance (T), due to the loss of critical crop or weed residue. In the after situation, the RUSLE2 model will be used to review the farming operation and determine if enough residue is being retained, throughout the rotation, to keep soil loss below T. The producer will then remove operations, or select alternate operations, as necessary, to reduce erosion below T. |
| Before Practice Situation | Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Spring tillage and seedbed preparation activities occur as early as possible in the late winter and early spring. Weed control is accomplished primarily through tillage, requiring multiple operations. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue monocultures, and long periods of bare soil. |
| After Practice Situation | Mulch tillage applies to all cropland and other lands where crops are planted. It applies to stubble mulching on summer fallowed land to tillage for annually planted crops and to tillage for planting perennial crops. It also includes some planting operation such as hoe drill, air seeder and no-till drill that disturb a small percentage of soil surface during the planting operation. In warmer areas, winter weeds or cover crops grow throughout the winter months. The residue that remains on the soil surface provides soil cover during late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. Wind erosion is reduced by standing residues. Winter weeds or the cover crop is terminated with tillage, a roller-crimper, shredding, or a combination of these methods prior to spring planting as late as feasible. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity in the cropping system. |
| Scenario Feature Measure | Area planted |
| Scenario Unit | Acre |
| Scenario Typical Size | 20 |

Cost Summary:

| Cost Category | Scenario Cost | Scenario Cost/Unit |
|------------------------------------|---------------|--------------------|
| Materials | \$0.00 | \$0.00 |
| Equipment/Installation | \$503.20 | \$25.16 |
| Labor | \$0.00 | \$0.00 |
| Mobilization | \$0.00 | \$0.00 |
| Acquisition of Technical Knowledge | \$200.67 | \$10.03 |
| Foregone Income | \$0.00 | \$0.00 |
| Total | \$703.87 | \$35.19 |

Cost Details:

| Cost Category | Component ID | Component Name | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|------------------------------------|--------------|---------------------|---|------|-----------------|----------|----------|
| Equipment/Installation | 945 | Tillage, Light | Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs. | Acre | \$10.00 | 20 | \$200.00 |
| Equipment/Installation | 946 | Tillage, Primary | Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs. | Acre | \$15.16 | 20 | \$303.20 |
| Acquisition of Technical Knowledge | 294 | Training, Workshops | Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants. | Each | \$116.67 | 1 | \$116.67 |
| Acquisition of Technical Knowledge | 297 | Transportation | Mileage to attend a training conference, workshop, or TSP travel associated with developing Conservation Activity Plan. | Mile | \$0.56 | 150 | \$84.00 |